



Reply to: 3430 Evaluation

Date: DEC 3 1982

Subject: Western Spruce Budworm

To: Forest Supervisor, Cibola NF

During August 1982, we conducted an evaluation of the western spruce budworm, Choristoneura occidentalis Free., on the Cibola National Forest. The purpose of this evaluation was to determine current infestation trends and predict expected defoliation in 1983.

Extensive areas of moderate to heavy defoliation, as observed from aerial detection surveys, to spruce, Douglas-fir, and true fir continued to occur on the Sandia, Manzano, and Mt. Taylor entomological units in 1982. Visible defoliation was first detected on the Sandia and Manzano entomological units in 1975 and next on the Mt. Taylor entomological unit in 1976. Egg mass surveys were conducted on all three of these units using standard sampling techniques to determine the mean egg mass densities per square meter of foliage for each unit.

Pockets of light to moderate defoliation were also observed on the Magdalena Mountains (Magdalena entomological unit) between north Baldy and south Baldy Mountains for the second consecutive year (figure 1). Total acres infested on this unit increased from 125 acres in 1981 to approximately 700 acres in 1982. An egg mass survey was not conducted on this entomological unit.

Table 1 summarizes the infestation trends on the Sandia, Manzano, and Mt. Taylor entomological units. A discussion of the data collected for each unit follows:

Sandia Entomological Unit. Extensive areas of budworm defoliation occurred on both the east and west sides of Sandia Crest (figure 2). Acres of visible defoliation on this unit increased from 4,800 acres in 1981 to approximately 5,750 acres in 1982. On the east side of the crest, defoliation was moderate to heavy and occurred mainly from Hondo Canyon north to Tejano Canyon. An isolated area of defoliation was also observed west of the Las Huertas picnic site near Osha Spring. Defoliation on the west side of the crest was moderate and mainly extended from south Sandia Peak to Pino Canyon. A small pocket of budworm defoliation was also detected on Sandia Peak.

The average egg mass density on this unit was 12.2 egg masses per meter square of foliage. Although this figure is substantially lower than the average number of egg masses reported last year and indicates that the infestation may be decreasing on this unit, the numbers of egg masses are still at high enough levels to cause moderate to moderately heavy defoliation throughout the unit in 1983. Although defoliation on the east side of Sandia Crest is expected to



decrease somewhat in area and intensity, defoliation is expected to remain highly visible from highways and recreation areas and some esthetic and visual impacts will continue to occur as long as the infestation remains at current levels. Defoliation on the west side of the crest is expected to continue at levels similar to those occurring in 1982.

Manzano Entomological Unit. Acres of visible defoliation increased slightly from 5,600 acres in 1981 to approximately 7,625 acres in 1982 (figure 3). The major area of defoliation occurred from Manzano Peak north to Upper Jaramillo Spring. An isolated pocket of moderate defoliation was also observed further north near Capilla Peak.

Egg mass densities on this unit averaged 49.1 egg masses per square meter of foliage. This egg mass density is still at a high level and indicates that the infestation and subsequent defoliation will continue to occur at a moderate to heavy level in 1983.

Mt. Taylor Entomological Unit. Defoliation resulting from the western spruce budworm continued to occur on the south and east sides of Mt. Taylor (figure 4). Defoliation was moderate to heavy from Rinconada Canyon east to Trough Spring and light near Water Canyon. Total acres of visible defoliation increased from 2,850 acres in 1981 to 3,800 acres in 1982.

Average egg mass densities on this unit remained relatively unchanged, only increasing from 18.7 in 1981 to 20.3 in 1982; however, this is a high enough level to cause moderate to heavy defoliation in 1983. Total acres defoliated and intensity of defoliation on this unit in 1983 are expected to remain at levels similar to those experienced in 1982.

In summary, larval budworm densities and subsequent defoliation on the Sandia, Manzano, and Mt. Taylor entomological units are expected to continue at a relatively high level in 1983.

Management alternatives for the western spruce budworm include:

1. No action.
2. Direct suppression with insecticides.
3. Partial treatment of selected, high-value areas with insecticides.
4. Silvicultural management.

Alternatives 1 through 3 are short-term alternatives, while alternative 4 is a long-term management alternative.

Recommendations for management of the current western spruce budworm outbreak:

1. Short-Term Pest Management. Direct suppression of the entire outbreak on the Sandia, Manzano, and Mt. Taylor entomological units is not recommended. Results from recent evaluations and aerial surveys indicate that this alternative

may no longer be practical or economically sound because (1) budworm population densities appear to be declining and (2) permanent tree damages may have already occurred. However, partial treatment programs may be considered a reasonable alternative where recreational and esthetic values must be preserved and/or where management objectives are threatened. Such areas would have to be evaluated on an individual basis to determine if suppression would be effective this late into the outbreak cycle. It must also be realized that partial treatment may only be effective for a short period of time, possibly 2 years, after which re-treatment may again be necessary.

No action is recommended for budworm infestations on the Magdalena entomological unit at the present time. Infestations on this unit are new and very small. Should the infestations on this unit continue to increase in 1983, direct suppression to prevent permanent tree damages may be a viable alternative in 1984.

2. Long-Term Pest Management. Where possible, silvicultural management is recommended to reduce the impacts of future budworm outbreaks. This can be accomplished by including pest management considerations into existing and future timber and fire management programs. For example, these management programs should facilitate the removal of old susceptible growth and favor ponderosa pine, Douglas-fir, and aspen in vigorous mixed conifer stands.



DOUGLAS L. PARKER  
Director of Forest Pest Management

Enclosures (5)

Table 1

Figure 1

Figure 2

Figure 3

Figure 4

cc:

TM (w/encls.)

WO (w/encls.)

RM (w/encls.)

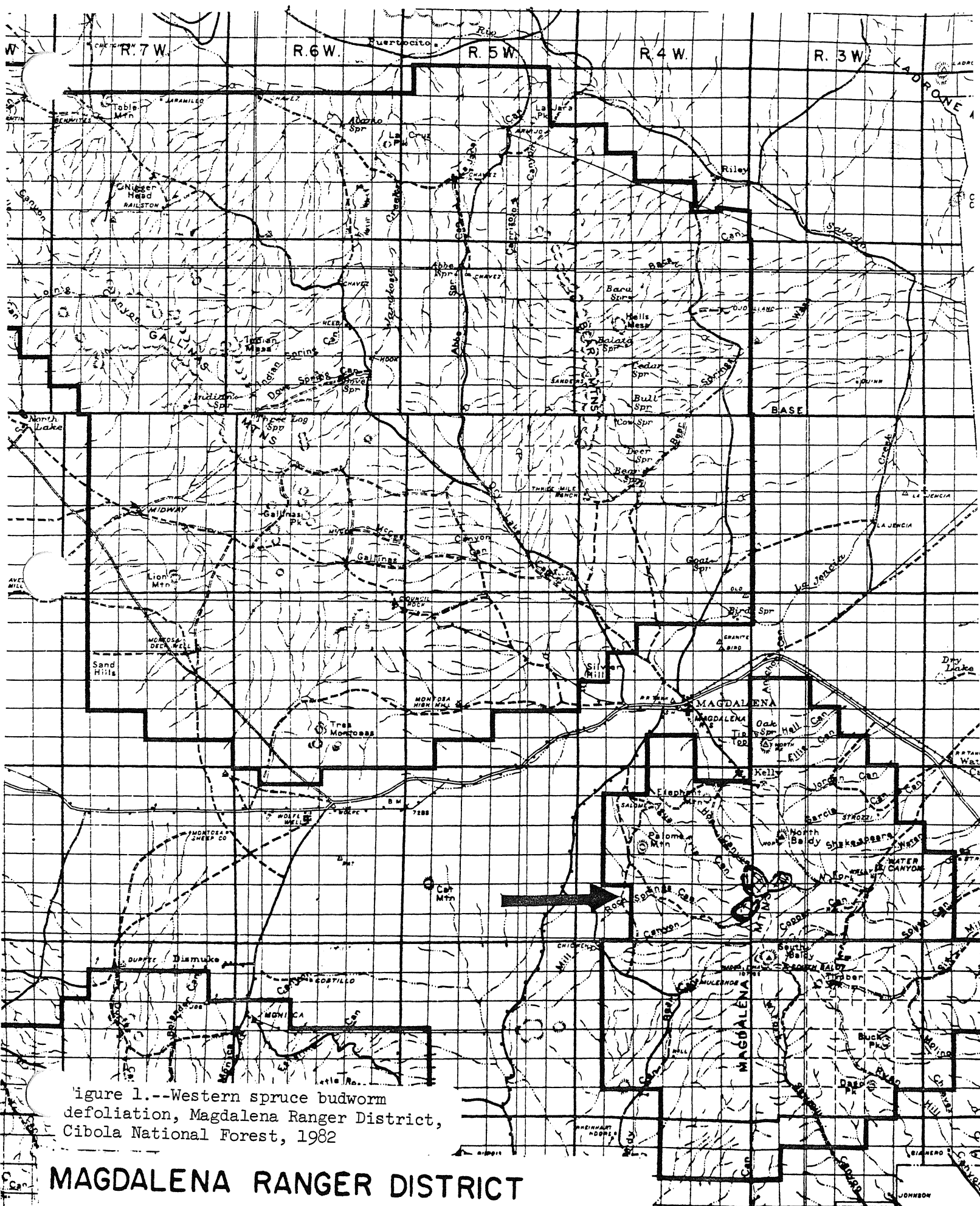
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TABLE 1.--Summary of infestation trends on the Sandia, Manzano, and Mt. Taylor entomological units

<u>Sandia entomological unit</u>							
	1976	1977	1978	1979	1980	1981	1982
New egg masses/sq. m foliage	16.3	4.4	2.6	7.8	71.1	50.8	12.2
Egg mass ratio <sup>a</sup>	1.0:1	0.3:1	0.6:1	3.0:1	9.1:1	0.7:1	0.2:1
Actual defoliation <sup>b</sup> acres	L 6,200	10,000	676	1,169	1,562	1,775	350
	M 3,400	920	547	527	2,406	2,425	4,275
	H 1,320	560	2,711	241	512	600	1,125
<u>Manzano entomological unit</u>							
	1976	1977	1978	1979	1980	1981	1982
New egg masses/sq. m foliage	17.5	14.4	17.1	37.1	81.8	62.3	49.1
Egg mass ratio <sup>a</sup>	1.5:1	0.8:1	1.1:1	2.2:1	2.2:1	0.8:1	0.8:1
Actual defoliation <sup>b</sup>	L 1,320	8,440	860	1,101	4,582	150	1,125
	M 3,440	1,240	1,551	1,331	2,432	2,975	1,825
	H 320	800	2,647	0	3,534	2,475	4,675
<u>Mt. Taylor entomological unit</u>							
	1976	1977	1978	1979	1980	1981	1982
New egg masses/sq. m foliage	--	--	--	--	40.3	18.7	20.3
Egg mass ratio <sup>a</sup>	--	--	--	--	--	0.5:1	1.1:1
Actual defoliation <sup>b</sup>	L 280	1,740	650	333	1,997	425	375
	M 330	715	750	486	333	1,925	500
	H 0	0	0	0	461	500	2,925

<sup>a</sup>Egg mass ratio is the ratio of new egg masses in the survey year to new egg masses of the previous year.

<sup>b</sup>Actual defoliation as determined from aerial detection survey. L = light, M = moderate, H = heavy.





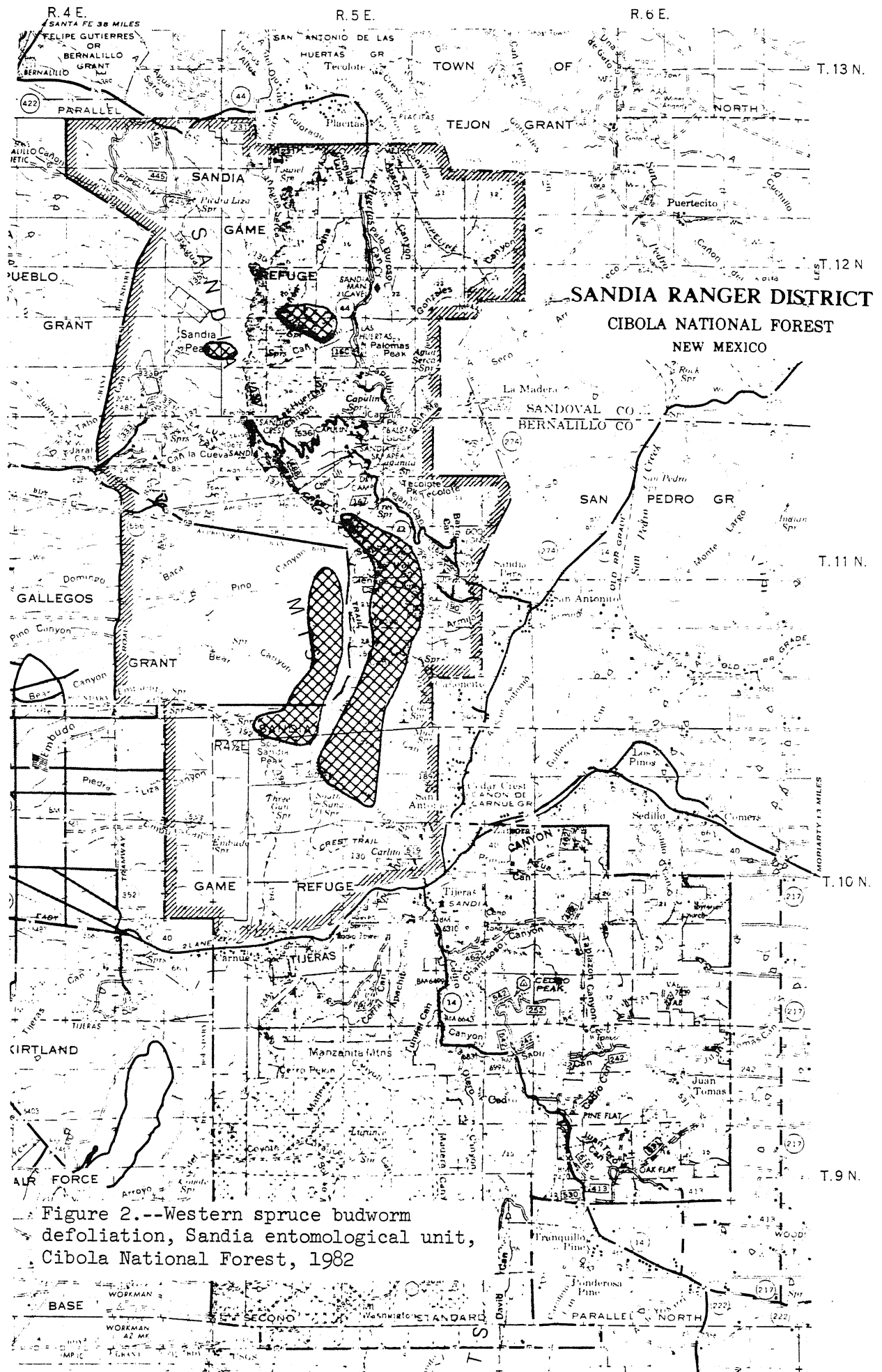
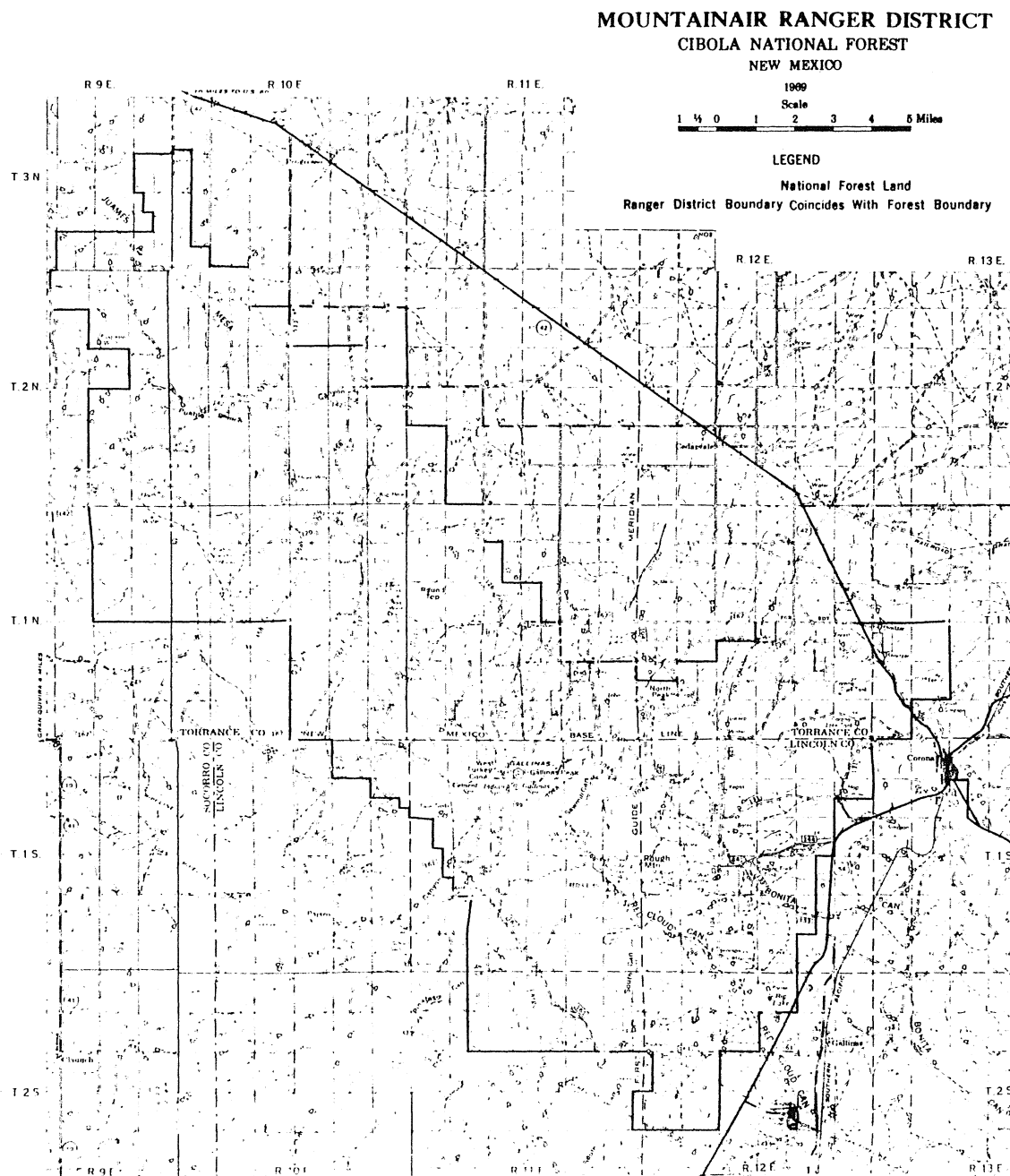
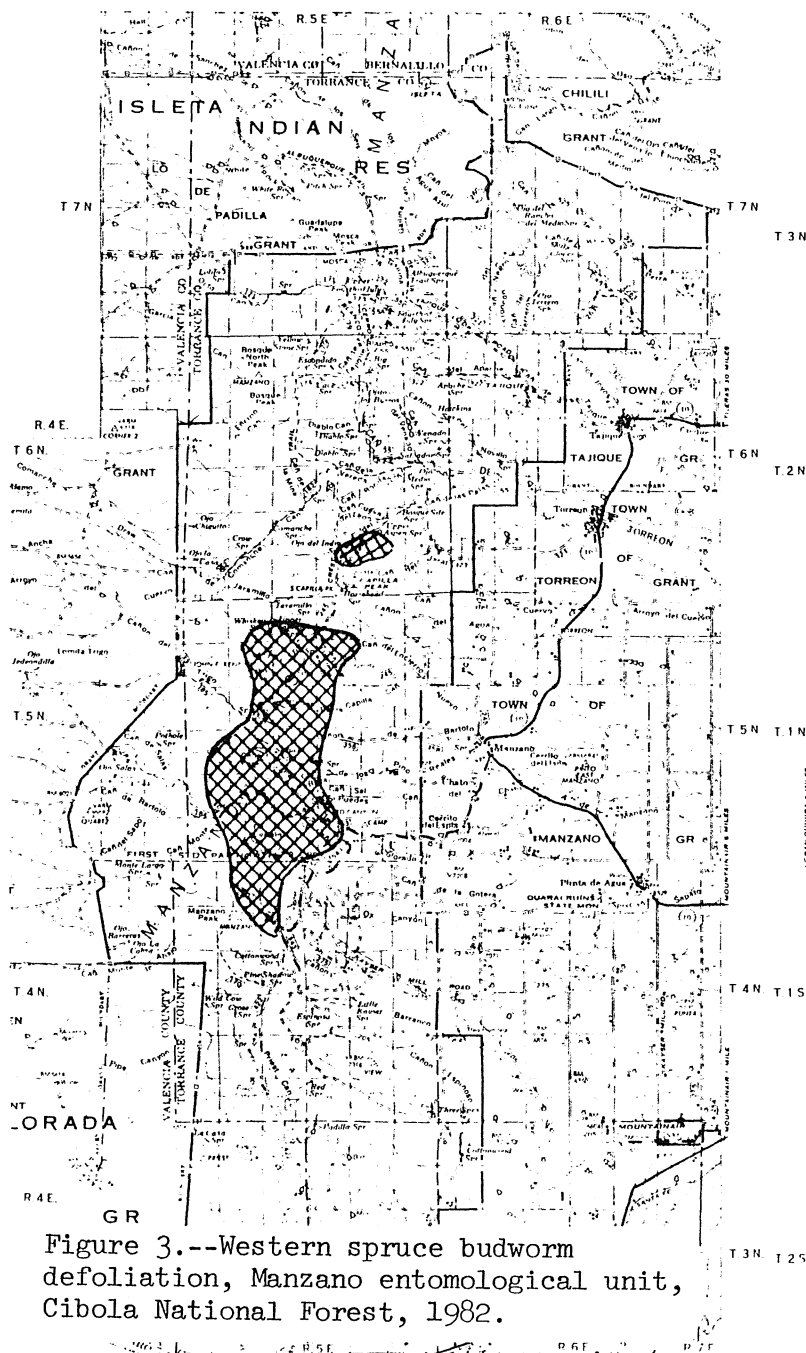


Figure 2.--Western spruce budworm defoliation, Sandia entomological unit, Cibola National Forest, 1982



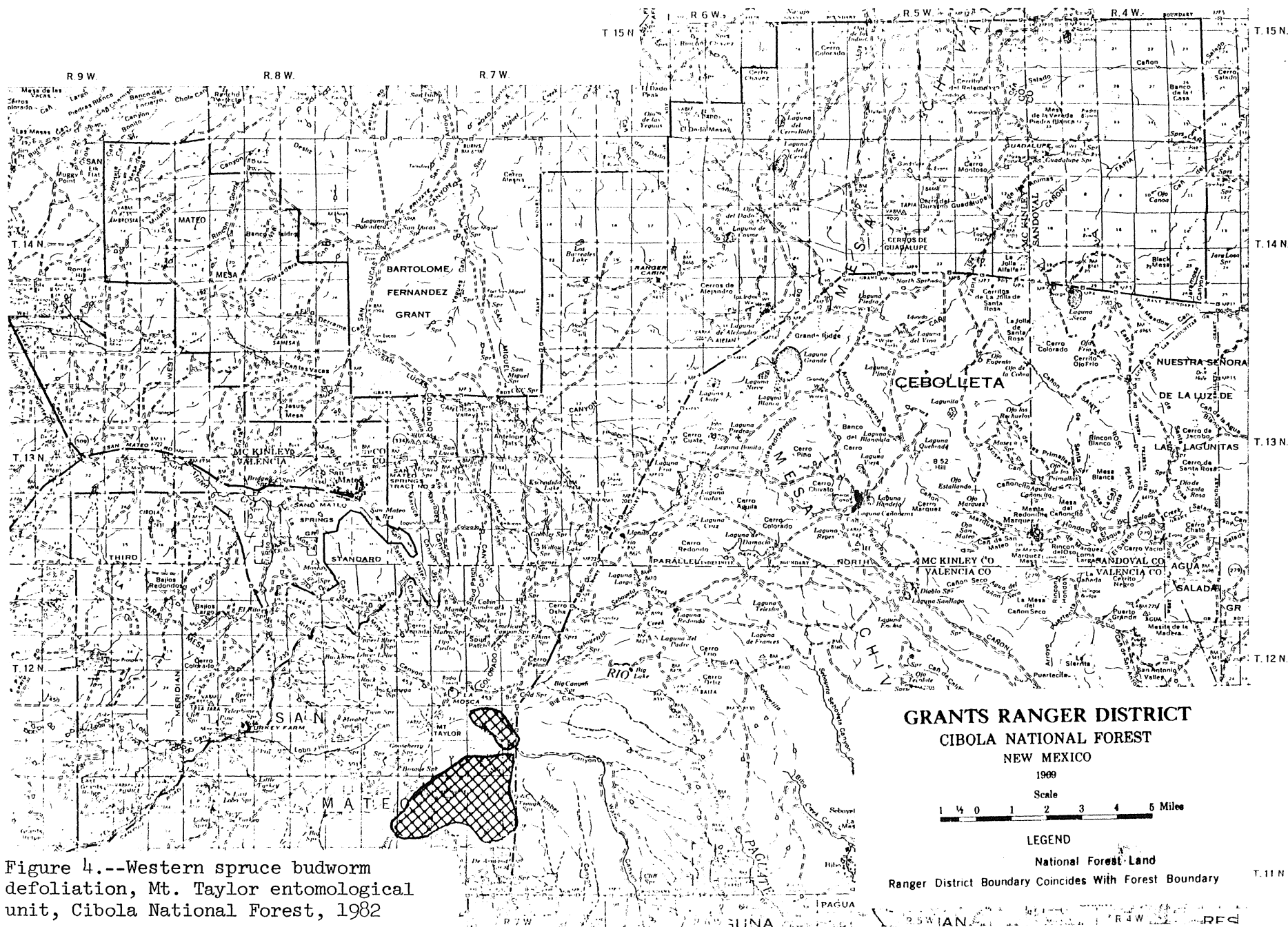


Figure 4.--Western spruce budworm defoliation, Mt. Taylor entomological unit, Cibola National Forest, 1982